Health Care Utilization, Barriers to Care, and Hormone Usage Among Male-to-Female Transgender Persons in New York City

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Objectives. We investigated health care utilization, barriers to care, and hormone use among male-to-female transgender persons residing in New York City to determine whether current care is in accord with the World Professional Association for Transgender Health and the goals of *Healthy People 2010.*

Methods. We conducted interviews with 101 male-to-female transgender persons from 3 community health centers in 2007.

Results. Most participants reported having health insurance (77%; n=78) and seeing a general practitioner in the past year (81%; n=82). Over 25% of participants perceived the cost of medical care, access to specialists, and a paucity of transgender-friendly and transgender-knowledgeable providers as barriers to care. Being under a physician's care was associated with high-risk behavior reduction, including smoking cessation (P=.004) and obtaining needles from a licensed physician (P=.002). Male-to-female transgender persons under a physician's care were more likely to obtain hormone therapies from a licensed physician (P<.001).

Conclusions. Utilization of health care providers by male-to-female transgender persons is associated with their reduction of some high-risk behaviors, but it does not result in adherence to standard of care recommendations for transgender individuals. (*Am J Public Health.* 2009;99:713–719. doi:10.2105/AJPH.2007.132035)

Transgender persons (or transpersons) are individuals who feel an incongruity between their self-identified gender and their birth gender. The overarching goal of care for transgender persons, as articulated in the *Standards of Care for Gender Identity Disorders* of the World Professional Association for Transgender Health (formerly the Harry Benjamin Society), is "lasting personal comfort with the gendered self to maximize overall psychological well-being and self-fulfillment."[1] Health care professionals can facilitate the real-life experience, hormone therapy, and surgery that are components of what is referred to as "triadic therapy" for transpersons. Many transpersons (including those who may not wish to pursue surgical interventions) seek hormone therapy to bring their appearance into alignment with their gender identity.[2–5] The *Standards of Care for Gender Identity Disorders* include a psychological and medical evaluation before hormone treatment,[1] with continued medical supervision during hormone use by a physician experienced in caring for transgender patients.[1,6]

Despite these recommendations, available data suggest that many transpersons are uninsured and that, overall, a smaller proportion of transpersons than of the general population access medical care. According to a national survey, only 30% to 40% of transgender individuals utilize any regular medical care.[3] Indeed, transgender persons may have difficulty identifying competent and compassionate providers with transgender patient experience. Additional obstacles to expertly supervised care might include economic limitations, comorbidities resulting from substance abuse, and stigmatization. As a result of these barriers, transpersons may obtain hormones from nontraditional sources, including friends, street vendors, the Internet, and pharmacists (in the absence of a prescribing physician).

The prevalence of unsupervised hormone use reportedly ranges from 29% to 63% within urban groups of male-to-female transgender persons,[5,7,8] posing significant health risks to transgender clients. One serious potential risk is that of HIV seroconversion from needle sharing or parenteral administration of hormones. Although no data exist on the incidence of HIV infection secondary to needle sharing, a review of US-based HIV prevention literature found an average HIV prevalence of 27.7% (range=16%–68%) among male-to-female transpersons.[9] Hormone therapy regimens pose additional health risks to transgender clients, the most serious of which is hypercoagulabilty associated with estrogen administration. The incidence of thromboembolism among male-to-female transgender persons on estrogen therapy ranges from 0.4% to 2.6% per year.[10,11] Other documented side effects include depression, mood swings, hyperprolactinemia, elevated liver enzymes, migraines, and decreased insulin sensitivity.[6,12] A review of endocrine treatments at Johns Hopkins University found that many clients use high-dose hormone regimens and utilize multiple hormones concurrently without medical supervision in the belief that this will achieve faster results.[6]

According to *Healthy People 2010*, biases against gender identity differences must be addressed to ensure access to quality health care and related services, eliminate health disparities, and increase quality of life and years of healthy life for all Americans.[2] This goal requires the collection of accurate information among individuals marginalized by their gender identity. Although there are some data documenting the health care needs of transgender persons in the United States,[2–5] the medical literature does not provide sufficient data on transgender individuals' access to medical care, availability of culturally competent providers, and access to supervised hormonal regimens to assist the "transition" to their self-identified gender.

Elucidation of this information may result in measures to improve the quality of medical care and increase healthful behaviors within this population, and it will show the health system's progress in reaching the goals set forth in *Healthy People 2010.* Therefore, we investigated utilization of medical care within a sample of male-to-female transgender persons in New York City.

Within our sample of transgendered persons, we evaluated potential barriers to care, types of health care providers utilized (general practitioner, endocrinologists, or mental health professionals), and sources and types of hormones utilized. We anticipated that persons with providers (general practitioners or mental health providers) would be more likely to report fewer barriers to care, fewer high-risk behaviors, and care that is provided in accordance with the current *Standards of Care for Gender Identity Disorders*. By assessing transgender patients' experiences with the health care system, we aimed to identify ways to improve their access to medical care and safe hormone therapy and aid in reaching *Healthy People 2010* goals.

METHODS

We recruited participants from 3 sites in New York City: CitiWide Harm Reduction, Housing Works, and the Transgender Project. CitiWide is a harm-reduction agency located in Bronx County whose mission is to offer outreach, services, and care to homeless and low-income drug users living with and at risk for HIV/AIDS. Housing Works is a community-based, not-for-profit organization whose mission is to provide housing, health care, advocacy, and vital supportive services to homeless New Yorkers living with HIV and AIDS. Both CitiWide and Housing Works have weekly transgender support group meetings that are open to transpersons from all walks of life, regardless of income or HIV status. The Transgender Project is a National Institutes of Health–funded research project that surveys transpersons' individual economic, social, and personal experiences.

We posted fliers at each site and advertised at weekly transgender support group meetings beginning in the spring of 2007. We conducted interviews between March 2007 and August 2007. All self-identified male-to-female transgender persons 18 years and older residing in New York City were eligible. After obtaining verbal informed consent, investigators administered surveys in a private room at the individual recruitment sites. At the completion of the interview, participants received $10 in compensation. To encourage candid responses regarding high-risk behavior, we did not collect any identifying information. To ensure that respondents participated on only 1 occasion, 1 investigator was present for all the interviews. Three surveys were not included in the final analysis because identical demographic data suggested duplication.

The Survey

The survey instrument consisted of 3 parts. Part 1 elicited demographic information including age, race/ethnicity, educational background, income, and citizenship status.

Part 2 assessed a participant's experience with health care providers and health care access. We asked participants if they had received care from a general practitioner, endocrinologist, or mental health professional within the past year. We assessed barriers to medical care with a 5-point Likert scale, in which participants indicated their level of agreement or disagreement with each item. Part 3 assessed the participant's access to, usage of, and problems associated with hormone usage. Participants were allowed to report multiple sources for hormone information and supplies. We modified survey items from validated surveys that have been used in federal studies evaluating access to health care programs for HIV-infected persons.[13] As an example, we modified the original question, "I am able to find providers knowledgeable of HIV/AIDS"[13] to "I am able to find providers knowledgeable of transgender health concerns." The investigators created questions specific to transgender hormone therapy to satisfy the objectives of this original research. An example is the following question, "Where do you currently obtain needles to inject hormones?" A complete review of the survey may be found in the appendix (available as a supplement to the online version of this article at http://www.ajph.org).

Statistical Analysis

To assess whether transpersons utilized the services of experts such as mental health providers, general practitioner, and endocrinologists (as recommended by *Standards of Care for Gender Identity Disorders*) and to determine whether utilization of such health care providers improved quality of care, we grouped participants according to the type of providers they currently access: (1) individuals with a general practitioner and mental health provider, (2) individuals with a general practitioner or mental health provider, and (3) individuals with neither. Because the number of individuals under the care of an endocrinologist was so small and because every person under the care of an endocrinologist was also receiving care from a general practitioner, we grouped those under the care of an endocrinologist with those seeing a general practitioner for statistical analysis.

We compared the 3 groups in terms of sociodemographic characteristics, access to medical care (i.e., psychological evaluation and medical evaluation), health-related behaviors, barriers to health care, and sources and types of hormone use. When assessing barriers to care, responses collected with a Likert scale were dichotomized and relabeled, where "yes" represents a respondent agreeing somewhat or strongly that an item was a barrier and "no" represents a respondent disagreeing or feeling neutral that an item was a barrier. We used analysis of variance to analyze continuous variables with a normal distribution and the χ^2 and Fisher exact test to compare categorical variables ($P<0.05$). We conducted analyses with SPSS version 16.0 (SPSS Inc, Chicago, IL) and SAS version 9.1.3 (SAS Institute Inc, Cary, NC).

RESULTS

Sociodemographics

Self-identified male-to-female transgender individuals (N=101) participated in the survey and were included in the analyses. The mean age of each participant was 37 years and the median age was 36 years (range=18–67 years Table 1). Among male-to-female transgender persons, 80% were currently living as women, 82% were current or past users of hormone therapy, 70% reported current hormone use, and 22% had undergone gender reassignment or breast surgery; 79% were non-White, and 21% of the sample was foreign born. Approximately half of the participants reported some education beyond high school; 28% of participants did not complete high school. Forty-one percent reported not earning enough money to pay for daily living expenses such as rent or food, and 45% of participants lived in someone else's home or relied on shelter placement.

TABLE 1—Sociodemographic and Health-Related Characteristics of Participants, by Current Health Care Provider: New York City, 2007

	Total Responses (N=101), Mean or No. (%)	General Practitioner and Mental Health Provider (n=54), Mean or No. (%)	General Practitioner or Mental Health Provider[a] (n=30), Mean or No. (%)	No Health Care Provider (n=17), Mean or No. (%)	P
Age, y	37.0	38.4	37.5	31.5	.091
Race/Ethnicity					.143
Non-Hispanic Black	23 (22.8)	10 (18.5)	8 (26.7)	5 (29.4)	
Hispanic	38 (37.6)	25 (46.3)	8 (26.7)	5 (29.4)	
Non-Hispanic White	21 (20.8)	9 (16.7)	10 (33.3)	2 (11.8)	
Non-Hispanic Asian	8 (7.9)	3 (5.6)	1 (3.3)	4 (23.5)	
Multiracial	11 (10.9)	7 (13.0)	3 (10.0)	1 (5.9)	
Foreign born					.014
Yes	21 (20.8)	8 (14.8)	5 (16.7)	8 (47.1)	
No	80 (79.2)	46 (85.2)	25 (83.3)	9 (52.9)	
Education					.912
Some high school or less	28 (27.7)	15 (27.8)	7 (23.3)	6 (35.3)	
High school graduate	23 (22.8)	12 (22.2)	8 (26.7)	3 (17.6)	
Some college or more	50 (49.5)	27 (50.0)	15 (50.0)	8 (47.1)	
Can currently pay for daily living expenses					.029
Yes	59 (58.4)	35 (64.8)	19 (63.3)	5 (29.4)	
No	42 (41.6)	19 (35.2)	11 (36.7)	12 (70.6)	
Housing					.012
Has own home or apartment	56 (55.4)	32 (59.3)	20 (66.7)	4 (23.5)	
Someone else's home or shelter	45 (44.6)	22 (40.7)	10 (23.3)	13 (76.5)	
Currently has health insurance					<.001
Yes	78 (77.2)	48 (88.9)	23 (76.7)	7 (41.1)	
No	23 (22.8)	6 (11.1)	7 (23.3)	10 (58.9)	
Currently on hormones					.089
Yes	71 (70.3)	43 (79.6)	18 (60.0)	10 (58.8)	
No	30 (29.7)	11 (20.4)	12 (40.0)	7 (41.2)	
Current smoker					.004
Yes	50 (49.5)	20 (37.0)	16 (53.3)	14 (82.4)	
No	51 (50.5)	34 (63.0)	14 (46.7)	3 (16.6)	
Alcohol use					.749
Never	28 (27.7)	15 (27.7)	8 (26.7)	5 (29.4)	
≤3 times per week	62 (61.4)	34 (63.0)	19 (63.3)	9 (52.9)	
4–6 times per week or daily	11 (10.9)	5 (9.3)	3 (10.0)	3 (17.6)	

Note. Continuous variables were analyzed with analysis of variance; categorical variables were analyzed with the χ^2 test or the Fisher exact test (for sample sizes of n<5 responses). Health care providers were identified as general practitioners or mental health providers.
[a]Twenty-eight individuals had a general practitioner only; 2 had a mental health provider only.

Twenty-eight percent reported a source of income exclusively "on the books." Half of all participants reported current tobacco use. Overall, transpersons without any current health care provider were statistically more likely than were participants with provider access to be foreign born, lack health insurance, be unable to pay for daily living expenses, live in someone else's home or in a shelter, and smoke cigarettes.

Access to Care and Types of Health Care Providers Utilized

Seventy-seven percent (n=78) of all study participants (80% of US-born participants) reported having some form of medical insurance. Among participants with insurance, the majority reported having Medicaid (n=58); the remaining had private health insurance. Among the 101 participants included in the study, 81% (n=82) reported having a general practitioner, 55% (n=56) reported having a mental health professional, and 6% (n=6) reported having an endocrinologist. All participants under the care of an endocrinologist were also receiving care from a general practitioner. Fifty-three percent (n=54) reported seeing both a general practitioner and a mental health professional concurrently, 28% (n=28) reported seeing a medical provider only, and 2% (n=2) reported seeing a mental health professional only; 17% (n=17) had neither a general practitioner nor a mental health professional. Poor (P=.029), uninsured (P<.001), and foreign-born (P=.014) male-to-female transgender persons who lacked stable housing (P=.012) were less likely than their counterparts to have access to a general practitioner or mental health professional.

Barriers to Care

Access to a provider knowledgeable about transgender health issues was the most reported barrier to care (32%) followed by access to a transgender-friendly provider (30%), cost (29%), access to a specialist (28%), location (18%), and language (13%; Table 2). Access to a knowledgeable provider about transgender health issues did not vary with provider group, indicating that this barrier persists despite improved access to care. Cost (P<.001) and access to a medical specialist (P=.001) were cited as significant barriers to care among participants lacking access to a general practitioner or a mental health professional.

Access to Hormones and Syringes

Among the 71 participants on hormones, 73% (n=52) listed a physician as 1 source of information about hormone regimens (Table 3); 23% (n=16) reported utilizing a source other than a physician for information about hormones. Compared with those who did not

TABLE 2—Participant-Reported Barriers to Health Care, by Current Health Care Provider: New York City, 2007

	Total Responses (N = 101), No. (%)	General Practitioner and Mental Health Provider (n = 54), No. (%)	General Practitioner or Mental Health Provider[a] (n = 30), No. (%)	No Health Care Provider (n = 17), No. (%)	P
Language					.988
Yes	13 (12.9)	7 (13.0)	4 (13.3)	2 (11.8)	
No	88 (37.1)	47 (87.0)	26 (86.7)	15 (88.2)	
Cost					<.001
Yes	29 (28.7)	7 (13.0)	11 (36.7)	11 (64.7)	
No	72 (71.3)	47 (87.0)	19 (63.3)	6 (35.3)	
Access to a specialist					.001
Yes	28 (27.7)	10 (18.5)	7 (23.3)	11 (64.7)	
No	73 (72.3)	44 (81.5)	23 (76.7)	6 (35.3)	
Location					.307
Yes	18 (17.8)	8 (14.8)	8 (26.7)	2 (11.8)	
No	83 (82.2)	46 (85.2)	22 (73.3)	15 (88.2)	
Access to a transgender-friendly provider					.089
Yes	30 (29.7)	11 (20.4)	12 (40.0)	7 (41.2)	
No	71 (70.3)	43 (79.6)	18 (60.0)	10 (58.8)	
Access to a transgender-knowledgeable provider					.569
Yes	32 (31.7)	15 (27.8)	10 (33.3)	7 (41.2)	
No	69 (68.3)	39 (72.2)	20 (66.7)	10 (58.8)	

Note. Categorical variables were analyzed with the χ^2 test or the Fisher exact test. Health care providers were identified as general practitioners or mental health providers.
[a]Twenty-eight individuals had a general practitioner only; 2 had a mental health provider only.

have access to health care providers, participants with access to health care providers were more likely to report obtaining information about hormones from general practitioners (P=.006).

Among the 71 individuals on hormones, 79% (n=56) listed a physician as 1 source of hormone distribution. Twenty-three percent (n=16) obtained hormones from a source that did not include a physician. Among the 56 individuals who obtained hormones from a licensed physician, 5 reported purchasing hormones from other sources to supplement their prescription regimen. Participants lacking a health care provider were more likely to obtain hormones from nontraditional sources, including friends (P=.003) and street vendors (P=.003), than were those with a health care provider. Participants with access to health care providers were more likely to access hormones from a general practitioner (P<.001) than were those without access to health care providers.

Among the 71 individuals on hormones, 1 reported sharing needles for hormone usage. This participant lacked any access to medical care. No one reported sharing needles for illicit drug use. Participants reported multiple sources for "clean needles." These sources included a prescription from a licensed physician (n=24) and needle exchange programs (n=16). Participants lacking any regular access to a health care provider were more likely to obtain syringes from friends (P=.002), whereas participants with access to providers were more likely to obtain syringes from a general practitioner (P=.002).

Among participants not currently using hormones (n=30), 40% (n=12) reported "concern for side effects" as the reason for abstaining from hormones. Lack of current medical care (n=9), cost of hormones (n=8), and physician refusal to prescribe (n=6) were also reported as reasons for not taking hormones.

Hormone Regimens

Sixty-six percent of participants (n=47) on hormones reported using needles to administer hormones (Table 4). Use of injectables did not vary with access to care (P=.424). The most popular injectable estrogen taken by male-to-female transgender persons in this study was Delestrogen (Bristol-Meyers Squibb, Princeton, NJ; n=31). Thirty-seven percent of male-to-female transgender persons (n=26) used more than 1 type of estrogen in their hormone regimen; this trend did not vary with access to care. Two participants reported using 3 types of estrogens concurrently. Participants who accessed medical care were more likely to take Aldactone (Pfizer, New York, NY) as part of their hormone regimen (P=.011). On a 5-point Likert scale, 21% (n=15) rated their current satisfaction with their hormone access and regimen "poor" or "fair." Male-to-female transgender persons who lacked medical care access were more likely to be dissatisfied with their ability to obtain hormone therapy (P=.001) and with the results of their regimen (P=.036).

Only 58% (n=41) reported completing a medical evaluation before starting hormone treatment. Twenty-eight percent (n=20) attributed a medical problem within the past year secondary to their hormone regimen. The most common problems reported included depression (n=5), weight gain (n=5), moodiness (n=4), and anxiety (n=2). These problems were not reported more often among participants with no health care provider (P=.449). Two cases of thromboembolic disease were reported. One participant who was using hormones without medical supervision reported a deep vein thrombosis. A second participant reported the development of a pulmonary embolus while on a Premarin (Wyeth Pharmaceuticals, Philadelphia, PA) regimen prescribed by her physician; this individual had stopped taking hormones 1 month before being surveyed.

Among those on hormones, 45% (n=32) reported taking medications that might affect their hormone regimens. These included antipsychotics or antidepressants (n=25), HIV medications (n=10), and medicines for diabetes (n=5). Male-to-female transgender persons

TABLE 3—Sources of Hormone Information, Hormones, and Supplies, by Current Health Care Provider: New York City, 2007

	Total Responses (n = 71), No. (%)	General Practitioner and Mental Health Provider (n = 43), No. (%)	General Practitioner or Mental Health Provider (n = 18), No. (%)	No Health Care Provider (n = 10), No. (%)	P
	Hormone information source (n = 71)				
General practitioner	52 (73.2)	34 (79.1)	15 (83.3)	3 (30.0)	.006
Pharmacist	5 (7.0)	1 (2.3)	3 (16.7)	1 (10.0)	.084
Endocrinologist	4 (5.6)	3 (7.0)	1 (5.6)	0	>.999
Friend	41 (57.7)	23 (53.5)	11 (61.1)	7 (70.0)	.620
Internet	18 (25.4)	10 (23.3)	4 (22.2)	4 (40.0)	.503
Off the street	1 (1.4)	0	0	1 (10.0)	.141
	Hormone source (n = 71)				
Traditional source					
General practitioner	52 (73.2)	36 (83.7)	15 (83.3)	1 (10.0)	<.001
Endocrinologist	4 (5.6)	3 (7.0)	1 (5.6)	0	.462
Nontraditional source					
Friend	12 (16.9)	4 (9.3)	2 (11.1)	6 (60.0)	.003
Pharmacist	5 (7.0)	1 (2.3)	2 (11.1)	2 (20.0)	.057
Street vendor	5 (7.0)	0	2 (11.1)	3 (30.0)	.003
Internet	1 (1.4)	0	1 (5.6)	0	.637
Foreign country	2 (2.8)	1 (2.3)	1 (5.6)	0	.637
	Syringe source (n = 47)				
Traditional source					
General practitioner	24 (33.8)	18 (41.9)	6 (33.3)	0	.002
Needle exchange program	16 (22.5)	9 (20.9)	3 (16.7)	4 (40.0)	.831
Pharmacist	3 (4.2)	1 (2.3)	1 (5.6)	1 (10.0)	.368
Endocrinologist	1 (1.4)	1 (2.3)	0	0	.999
Nontraditional source					
Friend	7 (9.9)	1 (2.3)	1 (5.6)	5 (50.0)	.002
Off the street	0	0	0	0	...

Note. Categorical variables were analyzed with the Fisher exact test. The total number of responses in each category may be greater than the number of participants, because many participants responded in the affirmative to more than 1 option in each category. Health care providers were identified as general practitioners or mental health providers.

with regular access to medical care were more likely to take antipsychotics and antidepressants than were their peers with no access to medical care (P=.001).

DISCUSSION

Study participants represent a heterogeneous sample of male-to-female transgender individuals currently living in New York City and include individuals from a range of racial backgrounds, age groups, insurance statuses, educational background, and economic status, although a significant proportion of participants were economically disenfranchised. The demographic background of participants was similar to transgender members of other metropolitan communities such as San Francisco, California, and Philadelphia, Pennsylvania.[4,7] We found that 20% of transgender individuals born in the United States currently lack health insurance.

Our survey is similar to a 1999 survey by the New York City Department of Health, which found that 21% of transgender respondents reported having no health insurance of any kind,[8] which is only slightly greater than the 15.8% of the general population of Americans reported to lack health insurance in 2006.[14] The proportion of transgender individuals lacking insurance in our cohort was surprisingly low in comparison with a sample of transgender residents of San Francisco, where 52% were found to lack health insurance.[7] It is unclear why this disparity in insurance status exists, especially as Medi-Cal, California's Medicaid program, reportedly covers transgender hormone treatments.[15]

Similar to the proportion of male-to-female transgender individuals in other large urban centers,[4,7] 81% of those in our cohort reported current access to medical care. This is significantly better than the national average of 30% to 40%.[3] Access to a general practitioner and mental health professional was associated with having health insurance, living in one's own home, having been born in the United States, and being able to pay for daily living expenses, whereas cost, inability to access a medical specialist, and inability to access a transgender-friendly and transgender-knowledgeable provider were cited as barriers to care. Importantly, even among participants who reported access to both a general practitioner and mental health professional, difficulty identifying a provider knowledgeable about transgender health concerns was reported as a concern.

Access to medical care among the male-to-female transgender participants in our study is associated with some notable benefits and risk-reduction behaviors. Although more than half the participants reported smoking (which is a relative contraindication to estrogen therapy), smoking was significantly lower among participants with an identified provider (P=.004). Needles were obtained by prescription among 100% of participants with health care providers, whereas none of those lacking a health care provider obtained needles by prescription. In addition, participants with access to as health care provider were less likely to obtain hormones from nontraditional sources. Despite these important risk-reduction behaviors, the simultaneous use of more than 1 estrogenic compound (which is not generally recommended) was no different among patients with than among those without a health care provider. The perception that health care providers lack necessary expertise to supervise hormone therapy, along with the wish to maximize and accelerate feminization, may at least partially account for the utilization of hormones from multiple and nontraditional sources.

TABLE 4—Male-to-Female Transgender Persons Hormone Use, by Current Health Care Provider: New York City, 2007

	Total Responses (n = 71), No. (%)	General Practitioner and Mental Health Provider (n = 43), No. (%)	General Practitioner or Mental Health Provider (n = 18), No. (%)	No Health Care Provider (n = 10), No. (%)	P
Mode of hormone administration					
Pill	59 (83.1)	36 (83.7)	17 (94.4)	6 (60.0)	.071
Injectable	47 (66.2)	27 (62.8)	11 (61.1)	9 (90.0)	.424
Gel or cream	5 (7.0)	4 (9.3)	1 (5.6)	0	.418
Patch	3 (4.2)	3 (7.0)	0	0	.260
Estrogen regimens					
Delestrogen[a]	31 (43.7)	20 (46.5)	6 (33.3)	5 (50.0)	.266
Estradiol	20 (28.2)	14 (32.6)	5 (27.8)	1 (10.0)	.390
Premarin[b]	32 (45.1)	20 (46.5)	6 (33.3)	6 (60.0)	.258
Estrogen (type unknown)	18 (25.4)	9 (20.9)	4 (22.2)	5 (50.0)	.293
Two or 3 estrogens	28 (39.4)	18 (41.9)	3 (16.7)	7 (70.0)	.151
Progesterone	12 (16.9)	10 (23.3)	2 (11.1)	0	.179
Aldactone[c] (antiandrogen)	29 (40.8)	21 (48.8)	8 (44.4)	0	.011
Medical evaluation before starting hormones	41 (57.7)	27 (62.8)	13 (72.2)	1 (10.0)	.003
On antipsychotics or mood stabilizers	25 (35.2)	22 (51.2)	3 (16.7)	0	.001
Poor hormone access	21 (29.6)	10 (23.3)	3 (16.7)	8 (80.0)	.001
Poor hormone satisfaction	15 (21.1)	6 (14.0)	4 (22.2)	5 (50.0)	.036

Note. Categorical variables were analyzed with the χ^2 test or the Fisher exact test (for sample sizes of n < 5 responses). The total number of responses in each category may be greater than number of participants, because many participants responded in the affirmative to more than 1 option in each category. Health care providers were identified as general practitioners or mental health providers.
[a]Bristol-Myers Squibb, Princeton, NJ.
[b]Wyeth Pharmaceuticals, Philadelphia, PA.
[c]Pfizer, New York, NY.

Limitations

Given the lack of data on the actual population size of male-to-female transgender individuals and the challenges linked with this highly stigmatized community, sample bias is a strong consideration with any research focused on this group. Our sample may not represent male-to-female transgender persons in general. Respondents were recruited in New York City, mostly at sites serving non-White, low-income clients. Other New York City male-to-female transgender persons and male-to-female transgender persons in other parts of the country may have different experiences accessing health care, different risk behaviors, and different hormone usage patterns. Face-to-face interviews may have also biased respondents to give responses that were more socially desirable than their actual experiences. In addition, advocates less satisfied with their care might be more likely to participate in the survey, resulting in biased results. Nevertheless, these data were from a large, diverse sample and shed light on health care access and risk behaviors among a group about which little is known.

Conclusions

We have demonstrated that poor, uninsured, foreign-born male-to-female transgender persons who lack stable housing are less likely to have access to regular medical care. We identified the cost of care, poor access to medical specialists, and poor access to health care providers who are knowledgeable about and friendly toward transgender individuals as barriers to care. Importantly, male-to-female transgender persons with good access to health care providers were more likely to have a medical evaluation before starting hormone therapy and to obtain hormone therapies from traditional sources. They are also more likely to adhere to risk-reduction behaviors, such as smoking cessation and obtaining syringes from traditional sources. Interestingly, male-to-female transgender persons both with and without regular medical care used hormone regimens that were not consistent with the current *Standards of Care for Gender Identity Disorders*, placing these patients at increased risk of adverse events secondary to suboptimal hormone administration.

Health initiatives should address these current gaps in care by continuing to help male-to-female transgender persons obtain health insurance and access caregivers who are knowledgeable about and friendly toward transgender individuals who will help them access and employ hormone therapies safely. To achieve this goal, the training of future health care providers should include cultural competency education that will improve attitudes toward transgender patients as well as increased knowledge of transgender health care needs. Research has shown that medical students who experience increased clinical exposure to gay, lesbian, and transgender patients perform more comprehensive histories, hold more positive attitudes, and possess greater knowledge of gay, lesbian, and transgender health care concerns than do students with little or no clinical exposure.[16] Furthermore, educational initiatives aimed at increasing the cadre of providers competent to provide hormone therapy and other care to transgender individuals compatible with currently accepted standards are indicated. Achievement of these recommendations will help meet the goals set forth in *Healthy People 2010.* ■

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At the time of the study, Nelson F. Sanchez and Ann Danoff were with New York University Medical Center, New York, NY. John P. Sanchez was with Montefiore Medical Center, New York, NY.

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Contributors

N. F. Sanchez originated and supervised the study and led the writing. J. P. Sanchez completed the analyses and assisted with the writing A. Danoff supervised the

study and assisted with the analyses and writing. All authors helped to conceptualize ideas, interpret findings, and review drafts of the article.

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Human Participant Protection

Institutional review board approval was obtained from New York University Medical Center and Montefiore Medical Center before collection of data on human participants.

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